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A SPECIFIC PROPOSAL FOR BALANCED DISARMAMENT AND ATOMIC CONTROL

by D. R. Inglis, D. A. Flanders,
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SECTION I. INTRODUCTION.

The disarmament plan presented here is intended to provide a demonstration that United States diplomacy has not yet tried all the approaches that should be tried to the problem of negotiating an agreement to end the atomic armament race before it gets completely out of hand. In this sense it is a sample plan. As a sample plan, we believe that it is more realistically representative of the needs of our nation and of the world today than are such predecessors as the report of the Acheson-Lilienthal committee, which was applicable to the needs of 1946, or of the recent sweeping "Department of Terrestrial Magnetism" proposal which departs, with somewhat more reckless abandon than seems politically feasible, from our professed desire to base atomic disarmament on the best available guarantees against evasion.

But in another sense it is more than a sample plan. It is a serious proposal for an outline of procedure which, while perhaps not unique, cannot, we believe, be paralleled by many plans of equal merit. This plan is perhaps not only getting close to the spirit of negotiation most compatible with our long-term national needs, but also to the detailed plan which should be made an important part of our foreign policy if we are to maximize the probability of avoiding a future atomic impasse. The disarmament problem is so thorny and complex that we can here do little more than present an outline and a general justification for this as a basis of procedure: the details are sketchy and tentative, being in need

of more accurate assessment, by specialists in various fields. Because this plan may be getting close to a useable form, we are giving it a closely restricted initial circulation, for international feelers may perhaps be more effective when not spoiled by propaganda effects.

In spite of the frustrations of previous negotiation, of which we are fully aware, in spite of the mean evasiveness of the Soviet substitute for diplomacy, with which we are deeply indignant, we conclude that we should continue to advocate further efforts towards effective negotiation. We conclude further:

(1) that it is to the mutual advantage of the US, as representative of the free world, and of the USSR, as representative of the Soviet orbit, to minimize the risk of future destruction that amounts almost to mutual annihilation by agreeing on a disarmament plan which balances the advantages and the necessary concessions for the two sides;

(2) that such a plan has not yet been proposed to ascertain whether the USSR would agree to it;

(3) that even after a control plan provides complete access to and inspection of atomic production facilities, there will remain an uncertainty in the amount of crucial (fissionable and fusionable) material that each side has reason to believe the other has produced, expressible roughly as a percentage (which we take to be somewhat less than 20% of the total past production);

(4) that because of this uncertainty and the consequent possibility of hiding a secret stockpile withheld from the disclosure of past production, it is reasonable to expect cautious and distrustful parties to an agreement to be willing to reduce their stockpiles in a controlled manner only down to an agreed-upon ceiling equal

to some fixed percentage of the larger atomic stockpile (which we take to be about 20%, in keeping with the uncertainty in verification of past production);

(5) that the rapid growth of stockpiles and the consequent growth of the actual amount of uncertainty in past production places a great urgency on stopping production of atomic materials soon, particularly on the side having the larger atomic stockpile;

(6) that in order to be acceptable and operate in the present distrustful world atmosphere, a realistic disarmament scheme must consist of stages, the accomplishment of no one of which would give either side an appreciable advantage in the hypothetical event of a breakdown in carrying out the agreement or of a subsequent outbreak of hostilities; and

(7) that there exist two sorts of asymmetry in the present alignment of world power (a preponderance of atomic armament on the US side and of armed manpower on the USSR side, and the greater degree of information available to the USSR about the US), which would make it disadvantageous to one side or the other if precisely the same steps of disclosure and disarmament were to be taken simultaneously by both.

These conclusions form the assumptions on the basis of which we proceed to formulate a disarmament plan. If the reader finds himself in disagreement with, or confused by, these conclusions, it is suggested that he read the more complete discussion of background material presented in Section IV, below, before reading further. More background material is to be found in references 1 through 4.

SECTION II. A FORMALLY ASYMMETRIC PLAN OF DISARMAMENT.

Because of the uncertainty whether an atomic stockpile would really have been eliminated when it is supposed to have been eliminated, we propose a plan whose explicit goal is partial rather than complete disarmament. Both atomic and conventional arms and armed forces are to be reduced to agreed-upon ceilings, compared with which the uncertainty will not loom so large as to seem potentially decisive. The plan includes a complete schedule of full disclosure and of disarmament down to the agreed-upon ceilings. In the specific example we present, the atomic ceiling is taken to be 20% of the larger stockpile, the ceiling of "conventional" arms and of armed forces is taken to be roughly one-third of the initial levels.

The rather high ceiling for conventional arms, where more nearly complete disarmament might seem to be a more desirable goal, is chosen so that a still rather substantial conventional armament may be relied upon to help reduce the importance of the atomic uncertainty. Thus the atomic stockpiles need not be kept large enough to do this alone.

It is envisaged that the entire plan will be agreed to in advance of the effecting of any of the stages.

Once these immediate and scheduled goals have been attained, there would be expected to follow a probationary period during which the ceilings would remain fixed. In this condition it does make sense to await an improved international climate before hoping to undertake further steps of disarmament, whereas with an atomic arms race in progress, it does not. The half-life of tritium is about twelve years, so the uncertainty in this part of the crucial-material stockpile will shrink. Guarantees against clandestine production must be good enough to assure that uncertainties

in the rest of the stockpile do not appreciably grow. The long-term cooling of tempers may make the uncertainty shrink in apparent importance. Then further disarmament may be expected.

What is treated in this article is the approach, by stages, of atomic and conventional disarmament, without corresponding elaboration of the necessary continuous control and/or inspection* following completion of disarmament. We believe that no extension of methods and procedures beyond those necessary to achieve the stages in this plan would be required for a high degree of assurance in such an inspection system. Since the final result of disarmament involves the retention of a substantial armament, the stringency of inspection need only assure that the maximum clandestine production is small in comparison.

The need for evaluation of steps.

In order to go about systematically designing a stage-by-stage plan in which neither side gains an appreciable military advantage over the other through the carrying out of any particular stage, it is desirable to assign, by the best method of estimating available, numerical values which will be taken to represent the loss in relative military potential represented by each step of disclosure or disarmament conceded by each side. Once the steps are listed and evaluated, they are arranged in the order in which they should be carried out. For simplicity of negotiation we make this order the same for both sides, though the stages at which any particular step will be carried out will be different for the two sides. The order is selected so as to accomplish the most desirable first things first. In particular, cessation of production of atomic crucial materials in declared plants is put as early as it can be and still be verified by minimum access.

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*Inspection would be defined to include complete and unhampered access except as limited by prior agreement.

We arbitrarily select seven as the number of stages. Having evaluated and ordered the steps, we next divide them into stages in such a way that the value of the total concession by each will progress toward the goal in seven jumps of approximately the same size, but with the atomic part of the jump larger than the conventional-armament part for the US, in accordance with the greater evaluation of its atomic facilities, and the other way around for the USSR.

In this discussion we use the abbreviation "US" to mean "United States and the rest of the free world", or "West", and "USSR" to mean "Russia and its satellites", or "East". It is considered very likely that, if agreement could be reached by the two principal contenders in the atomic armament race on the general nature of a plan such as this, the other nations associated with them would be only too glad to go along, so the abbreviations used are suggestive of the principal parties to the negotiations. The evaluations include the facilities of the associated nations.

In assessing a value of each category to each side, "value" is rather loosely defined but is related to the following assumed immediate aims (which might be considerably modified by successful disarmament). It is assumed that the military aims of the United States are to be in a position to help other nations of the free world effectively to resist Soviet pressure and prevent Soviet invasion, to minimize the effectiveness of a possible Soviet atomic attack both at home and abroad, and to maximize the prospective effectiveness of a threatened atomic attack on the Soviet orbit. All of these aims center around the over-all intention of minimizing the temptation of the Soviet leaders to initiate further expansion by making it appear as unprofitable. It is assumed that the military aim of the Soviet leaders is essentially the opposite counterpart of this, the over-all intention for the immediate future being not only to maintain

a tenable defense, but also to intimidate bordering parts of the free world into succumbing to the Soviet hegemony, and the rest of the free world into doing nothing about it. Insofar as the military aims of the two sides are the opposite counterparts of one another, the "value" of a given disarmament step by a given side should be roughly the same from the point of view of either side viewed as a gain by one and a loss by the other, so we do not specify which point of view is taken in defining "value". Our estimates are rough, so the distinction is not very significant. If there is doubt we try to strike an average of the two points of view, so as to arrive at a plan which will come as near as possible to looking equitable to both sides, so far as we can judge.

Even though the numbers assigned represent nothing more than subjective judgements concerning relative values, and so can have no very exact meaning, they are useful in helping us in a systematic way to arrange balanced stages. The numbers are intended for the use of American advisors and policy makers only, not to appear in any proposal to a foreign nation unless it is deemed that this would help "sell" the plan in the negotiations. It seems to us more likely that the numbers would supply needless grounds for international bickering, so the result we arrive at by the use of the numbers should be translated back into words in writing a diplomatic proposal. The numbers will then have served to help convince us that the plan is equitable. We shall here describe our stages both in terms of the numbers and in words.

Evaluation of the steps of disclosure and disarmament.

The steps to be evaluated are divided into the main classes "atomic" and "conventional". The atomic class includes geographical access to territory because this access in detail is more important to the success of atomic verifications of declarations than it is to the "conventional",

though it is of course important to both. The "conventional" class includes all non-atomic categories, even though biological warfare and other advanced weapons are not properly described by the epithet.

For the sake of brevity in the evaluation tables, we use a code to name the various steps of disclosure and disarmament in the various categories of armaments and facilities. The various atomic steps are denoted by small letters, with subscript numbers to indicate the categories. The conventional steps are denoted by capital letters, with similar numerical subscripts to indicate the categories.

The codes and our evaluation of the steps are listed on the following two pages.

ASYMMETRIC PLAN - CODE AND EVALUATION FOR ATOMIC ARMS AND FACILITIES

a. Declare inventory of the products of:
b. Declare location of:
c. Permit search of territory by aerial survey, with declaration of use of installations spotted, as requested.
d. Permit ground access to entire national territory (perhaps with specified, small-area local exceptions), with similar declaration of use.
e. Permit exterior access to:
f. Permit interior access to (in sufficient detail to show exterior of machinery):
g. Permit complete access to, including product-sampling, checking of records (and personnel questioning), and dismantling of apparatus where necessary for verifying declarations. Samples to be dismantled are to be selected by inspection team but limited in number to remain within scheduled cut-backs of production or stockpile:
h. Discontinue production of:
i. Eliminate (weapons, materials, and production facilities) down to a previously agreed-upon ceiling. This item is listed fractionally: for example, i(20%) means eliminate to the extent of 20% of the way from the starting point down to the ceiling. i means the same as i(100%):

The categories to which these steps (except c and d) apply are indicated by subscripts:

1. Mines.
2. Refineries.
3. Production plants for materials (fissionable and fusionable).
4. Weapons production installations.
5. Crucial materials and weapons.

TABLE I.---Evaluation of Atomic Steps

Step	Value of concession by	
	U.S.	U.S.S.R.
a_{234}	4	9
be_{12}	2	4
beh_3	18	18
fgh_2	3	4
b_4c	2	12
e_4d	3	15
f_3	6	6
h_4	6	6
$afgh_1$	4	5
g_3	18	17
fg_4	35	16
bfg_5	10	6
i	154	56
Total value	265	174

ASYMMETRIC PLAN - CODE AND EVALUATION FOR CONVENTIONAL ARMS AND FACILITIES

A. Declare location of fabrication and development installations, permit exterior access, and discontinue production of:
B. Declare inventory, supply construction (organization) plans, and permit detailed inspection of:
C. Eliminate half way down to prescribed ceiling, of:
D. Eliminate rest of way down to prescribed ceiling, of:

1. Armed forces personnel (uniformly by categories).
2. Tanks and artillery.
3. Submarines.
4. Naval surface craft.
5. Planes, long-range.
6. Planes, short-range.
7. Rockets, guided missiles, B.W., and other advanced weapons.

TABLE II. Evaluation of Conventional Steps

Step	Value of concession by	
	U.S.	U.S.S.R.
A_1	3	10
A_2	4	10
A_3	3	20
A_4	6	0
A_5	10	5
A_6	10	20
A_7	20	20
B_1	1	5
B_2	2	5
B_3	3	10
B_4	7	0
B_5	7	5
B_6	4	5
B_7	20	20
C_1	4	12
C_2	7	15
C_3	4	20
C_4	12	0
C_5	10	5
C_6	14	25
C_7	3	3
D_1	6	20
D_2	10	22
D_3	6	30
D_4	18	0
D_5	15	7
D_6	21	37
D_7	5	5
Total value	235	326

Combined Step	Value of Concession by	
	U.S.	U.S.S.R.
A_{15}	7	20
A_{56}	20	25
BC_1	5	17
A_7	20	20
B_5	3	10
A_{24}	10	10
B_{56}	11	10
B_{24}	9	5
C_{34}	16	20
C_{56}	24	30
C_2	7	15
BC_7	23	23
D_1	6	20
D_{34}	24	30
D_{256}	46	66
D_7	5	5
Total value	235	326

Our reasons for evaluating the steps as we have are incomplete because of limitations of time and access to information. A more careful re-evaluation would be desired if it were to be used as a basis of actual negotiation. Even our incomplete reasons cannot be described completely here, for our discussions have been longer than this report. We shall, however, now attempt to list the most relevant considerations which have influenced the judgements represented by the numbers assigned to the various steps. Values we have assigned are given at the end of each section.

Reasons for Evaluation of Steps, Atomic.

a_{234} (Declare stocks and present production rates of uranium, fissionable material, and atomic weapons). US declaration has moderately small value, since strategic value of knowledge lies in the fact that we have a preponderance, not in the exact size of US stockpile, and they probably know it pretty well anyway. USSR declaration has more value because its stockpile is probably small enough that its size is crucial for its effectiveness, and we know less about it. (US-4; USSR-9)

be_{12} (Permit exterior access to mines and refineries). This is necessary as a preliminary to stopping production, but does not reveal valuable information, or is at best a rough indication of future potential of USSR. Much less important as US concession because our important sources are known. USSR concession important as a symbol of raising iron curtain. (US-2; USSR-4)

beh_3 (Discontinue production of declared crucial-material producers, verified by exterior access. This includes discontinuing construction of new plants.) This is the vital first step in stopping the atomic arms race and as such is a valuable concession. We rate this feature of it as a greater concession by US than USSR because of our estimate that US production is still greater. But the knowledge of the location

of the plants is an important concession by USSR for strategic value in possible war. Some reliance can be placed on completeness of declaration of plants because search of territory will follow soon after (aerial survey in same stage and ground access in the next stage). (US-18; USSR-18)

fgh$_2$ (Detailed disclosure and shutting down of refineries.) An unimportant concession both ways if, as we suspect, there are no very important metallurgical "secrets". There is a slight strategic value of unknown location in this concession by USSR. (US-3; USSR-4)

b$_4$c (Declare location of weapons producing and development installations and permit aerial survey of all territory.) The aerial survey thus accompanies or follows declaration of all atomic installations except weapons storage sites, which it could not be expected to discover. It thus serves to begin to verify the completeness of declarations already made. Because we presumably know so little about them, this is a much larger concession by USSR than by US. (US-2; USSR-12)

e$_4$d (Exterior access to weapons-producing installations and ground access to all territory except inside of certain declared installations.) Likewise greater concession by USSR, and evaluating it high makes it less apt to be critical stumbling block in negotiation. (US-3; USSR-15)

f$_5$ (Interior access to crucial-material producing plants.) This is a step which in itself will not reveal more than general process layouts, but it will be valuable to have conceded it early to show that things have not been maliciously altered in the period before detailed inspection. In terms of "know-how", the process layouts have some but not very great value. Value placed equal both ways

because we assume our greater progress is about cancelled by their greater secrecy, for this item. (US-6; USSR-6)

h_4 (Discontinue weapons production, based on depopulating Los Alamos, "Los Alamansk," etc., down to skeletal maintenance crew, as checked by exterior access.) Should come early, but fairly low value, because only current development and production is irretrievably lost. (US-6; USSR-6)

a^2gh_1 (All significant access to mines, and discontinue mining.) More important concession by USSR because of iron curtain. Moderate information value, and an aid to over-all check since it permits accounting for ore stocks and what has been refined and concentrated. Discontinued mining valued low because it follows discontinued fissionable material production. (US-4; USSR-5)

g_3 (Complete access to crucial-material producing installations, including significant dismantling of apparatus, product sampling and checking of records, listing and querying of personnel.) This reveals all critical details of processes and completes necessary data for estimating past production. It is complicated by requirement that installations will already have been shut down. In the case of diffusion plants, it may be required to start them up again to reach equilibrium and demonstrate typical performance at this point. From piles, sample fuel elements and other removable parts may be withdrawn; and the fact that they have been shut down for a known period will help to isolate the most helpful long-lived activities. Over-all plans of the apparatus are disclosed and constitute most of the value of this as a concession.

The greater value assigned to US concession is based on our assuming US technical superiority and that US security of information has been fairly effective in this area. (US-18; USSR-17)

fg_4 (Permit all significant access to weapons-producing installations.) This step includes access to actual plans and specifications of the weapons including thermonuclear weapons and samples of all vital parts. Technical advances in US since wartime security leaks probably considerably greater than in USSR (as judged by number of tests). This and US dependence on atomic superiority give this step highest value as US concession. (US-35; USSR-16)

bfg_5 (Complete access to weapons and fissionable materials stockpile.) This step should include possibility of agreed-upon sampling and demonstration, such as, after declaration of which types had been tested at which times, selection of a very few bombs by inspection team to be demonstrated in sample tests. Main sacrifice at this point is security of storage sites through secrecy. (US-10; USSR-6)

i (Eliminate stockpile of crucial material and bombs down to prescribed ceiling.) We assume that complete checking of technical details will give each side assurance of knowing the other's stockpile to better than 20%, and that the agreed-upon ceiling for each stockpile will be fixed in advance as 20% of the initial size of the larger of the two. We further assume that the initial size of the USSR stockpile will be anticipated to be about one-third of the US stockpile. In this case the USSR stockpile would be reduced by 40% (to 60%) of its initial size (or by an amount equal to only 13% of the initial US stockpile) while the US stockpile is reduced by 80% (to 20%) of its

initial size. While the USSR reduction amounts to only one-sixth as much materiél as the US reduction, as a disarmament step it is valued at about one-third as much because the US is nearer saturation. That is, the last few USSR bombs eliminated have better potential targets (cities and amphibious landings). The US reduction of stockpile (i) is evaluated somewhat higher than the complete US release of information (all steps except i). If we believed the Soviets had learned nothing of our atomic technology, it would be the other way around, in our estimate. (US-154; USSR-56).

Reasons for evaluation of steps, conventional:

In the field of conventional forces and armament, disarmament may be required to commence in one category before disclosure is complete in another, and disarmament may proceed part way successively in several categories before being completed in any. For this reason disarmament in each category is divided into a first half, C, and a second half, D, and these may be further subdivided for purposes of scheduling the stages. It is assumed that the prescribed ceiling will be about one-third of the initial level of armament in each conventional category, and thus that C and D will each represent a reduction by about one-third. For purposes of evaluation of the steps, D is evaluated 50% higher than C in each category, expressing a "law of diminishing returns". There will presumably be greater reluctance in parting with the middle third than the top third in each category, as one thereby comes closer to complete disarmament.

In total value of conventional categories, the USSR is assumed to exceed the US by the same amount that the US exceeds the USSR in the atomic category. On each side, actual conventional disarmament is valued above dislosure and discontinued production by about 40%. This figure was arrived

at only after detailed estimates in the various categories. Such a relationship, with disarmament valued higher than the preliminary steps, holds for each of the categories except (7), rockets and other advanced weapons, in which category it is estimated that information is much more valuable than stocks on hand.

Category 1. Armed forces personnel. (Reduction shall be uniformly by categories or by "branches" of the service, among those categories to be reduced. Certain demonstrably purely defensive categories, notably fixed-emplacement anti-aircraft batteries and radar installations, may be exempted from reduction of either equipment or personnel.) Evaluation is based on the assumption that the USSR has an important preponderance in military manpower immediately available for fighting and in trained reserve, and that this category is more important to the USSR than to the US, since success of an attack on the Eurasian land mass would be dependent on it. Discontinued training (A) more important than information concerning this category (B) but less important than actual demobilization (C and D), because we count in (A) only the value of the training lost up to the time when demobilization commences, after which (C) and (D) take over, (C) and (D) include the absence of further training (until later when superannuation of reserves requires a prescribed amount of training to maintain forces up to the prescribed ceiling).

Category 2. Tanks and artillery. Evaluation depends on considerations similar to those for Category 1, though the discrepancy between US and USSR is not so great, and steps (C) and (D) are valued relatively higher because it is harder to rebuild such equipment than to remobilize troops. US heavy equipment is relatively somewhat less valuable than it otherwise would be because there is more question

as to whether it can all be transported overseas to the prospective battlefield in wartime.

Category 3. Submarines. USSR numerical superiority in this item is matched and pitted against US superiority (virtual monopoly, with its allies) in naval surface craft. The major role of USSR submarines is to isolate US from its allies in a war. The minor role, possible delivery of atomic bombs to US coastal cities, cannot be greatly reduced by any partial disarmament in this category, since probably only a small fraction of the present fleet could be used in this mission. Main value of US submarines is assumed to be as an anti-submarine weapon, and presumably the ones specially equipped for this would be among the last to be eliminated.

Category 4. Naval surface craft. US units in being much more important than information concerning them. Elimination of US surface vessels valued less than USSR elimination of submarines because US surface fleet includes such types as battleships which have no worthy potential enemies, and of the rest of the fleet much of the value depends on its probable but undemonstrated effectiveness against snorkel submarines.

Category 5. Long-range planes. Aircraft are listed according to their range so that primarily offensive types could be scheduled for elimination before the shorter-range, primarily defensive types, but this distinction has not been used in the schedule here proposed. Long-range planes are intrinsically more important to the US because they constitute the only implementation of our atomic threat to most of Soviet territory (whereas many of the important cities of ourselves and allies are near the sea.) The US is also assumed to be more

advanced in this category.

Category 6. Short-range planes. It is assumed, on the basis of news reports, that the USSR has numerical superiority in this item and that this is not completely counterbalanced by US superiority of individual performance. This is a very important item for both sides and even discontinued production (A) is rated fairly high because of the rapid rate of production and rapid obsolescence of older models.

Category 7. Rockets, guided missiles, biological warfare, and other advanced weapons. Here the lack of information of the authors of this plan is an even more serious drawback than in the other categories. We have rated discontinued development (included in A) and technical information (B) high because we believe there is probably rapid and effective development on both sides; we have rated destruction of weapons in this category low because we guess that the rapid rate of obsolescence has probably kept stockpiles so small that they would not be extremely difficult to replace.

Specification of the stages.

The order in which the steps are to be carried out is the order in which they are listed in Table I and on the right side of Table II. With the order and evaluation thus fixed, the division of the steps into the seven stages of the disarmament plan is then largely a matter of simple arithmetic. It is, of course, necessary to watch the totals of atomic and conventional steps to keep the stages nearly uniform, within the limitation of placing the boundaries between stages at the values provided by the sequence of steps, without introducing subdivisions of individual steps. The steps involving elimination of certain facilities a fraction of the way down to the ceiling may be subdivided without introducing additional awkwardness.

The stages of our plan are represented in a simple graphical manner in Figures 1 and 2. In Figure 1, the atomic and conventional steps are listed separately, in Figure 2 they are combined. In the upper half of Figure 1, for example, there are two vertical scales, one representing the value of concessions by the US, the other by the USSR. The marks on the scales represent the total value of all steps up to and including the step there named in code, and the distance between adjacent marks represents the value of the step. The lines that look like staircases represent the progression of stages, the "dotted" line for the US and the solid line for the USSR. A horizontal part of one of these lines indicates the level to which a given stage progresses.

The upper half of Figure 1 shows in detail how the USSR proceeds more rapidly than the US in conceding value of conventional stages, while the lower half of Figure 1 shows that the US proceeds more rapidly in atomic concessions. Figure 2 is formed by simply adding the values of the atomic and conventional parts of each stage, and shows that in total value, the stages conceded by the two sides are very well matched, within the limited accuracy of our evaluations. This is also shown in Table III.

The atomic concession in the first stage by the USSR is purposely made considerably smaller than that by the US so that the US, which is ahead in this field, may take the lead in this aspect of disarmament. The USSR is accordingly required to take the lead in conventional disarmament.

Verbal Description of the Stages.

Stage 1.

U. S. Atomic. Declare stocks and present production rates for uranium, fissionable materials and atomic weapons; permit exterior access to mines and refineries, followed by detailed disclosure and shutting

TABLE III. Evaluation of Stages.

Stage	Atomic Concession by		Conventional Concession by		Total Concession by	
	US	USSR	US	USSR	US	USSR
1	32	13	27	45	59	58
2	34	34	38	37	72	71
3	35	27	36	45	71	72
4	41	22	31	55	72	77
5	46	31	29	43	75	74
6	38	20	39	55	77	75
7	39	27	35	46	74	73
	265	174	235	326	500	500

down of refineries; discontinue production of crucial-material producers, verified by exterior access; declare location of weapons producing and development installations and permit aerial survey of all territory.

U. S. Conventional. Declare location of soldier training centers, permit exterior access, and discontinue soldier training; declare location of development and fabrication installations for submarines and all planes, permit exterior access to these and cease all production.

USSR Atomic. Declare stocks and present production rates for uranium, fissionable materials and atomic weapons; permit exterior access to mines and refineries.

USSR Conventional. Same as US.

Stage 2.

US Atomic. Permit exterior access to weapons producing installations, and ground access to all territory (other than some specifically excluded small areas); permit interior access to producing plants for crucial materials; discontinue weapon production, and depopulate installations producing and developing weapons, as checked by exterior access; permit complete access to mines and discontinue mining; permit product sampling and checking of records of installations producing crucial materials.

US Conventional. Declare total number of armed forces personnel, supply armed forces organization plans, and permit detailed inspection of the forces; demobilize armed forces half-way down to the prescribed ceiling; declare inventory of submarines and supply construction plans

as well as allowing detailed inspection; declare location of development and production installations for tanks, artillery, naval surface craft, rockets, guided missiles, B.W., and other advanced weapons; permit exterior access to these installations and discontinue production and development therein.

USSR Atomic. Discontinue production by producers of crucial materials, verified by exterior access; detailed disclosure and shutting down of refineries; declare location of weapons development and producing installations and permit aerial survey of all territory.

USSR Conventional. Declare total number of armed forces personnel, supply armed forces organization plans, and permit detailed inspection of the forces; demobilize armed forces half way down to the prescribed ceiling; declare location of development and production installations for rockets, guided missiles, B.W., and other advanced weapons; permit exterior access to these installations and discontinue production and development.

Stage 3.

US Atomic. Permit complete access to weapons-producing installations, including plans for weapons.

US Conventional. Declare inventory of tanks, artillery, naval surface craft, and all planes; supply construction plans and permit detailed inspection of these; eliminate submarines and surface naval craft half way down to prescribed ceiling.

USSR Atomic. Permit exterior access to weapons producing installations and ground access to all territory (other than some specifically ex-

cluded small areas); permit interior access to producing plants for crucial materials; discontinue weapon production, and depopulate installations producing and developing weapons, as checked by exterior access; permit complete access to mines and discontinue mining.

USSR Conventional. Declare location of development and producing installations for tanks, artillery and naval surface craft; permit exterior access to these installations and discontinue production; declare inventory of tanks, artillery, submarines, naval surface craft, and all planes; supply construction plans and permit detailed inspection of all of these; eliminate submarines and naval surface craft one-fourth the way down to the prescribed ceiling.

Stage 4.

US Atomic. Permit complete access to weapons and fissionable materials stockpile. Reduce atomic stockpile by 20% towards agreed upon ceiling.

US Conventional. Eliminate tanks, artillery, and all planes half way down to prescribed ceiling.

USSR Atomic. Permit complete access to mines and discontinue mining; permit product sampling and checking of records of installations producing crucial materials.

USSR Conventional. Eliminate submarines and naval surface craft half way down to prescribed ceiling (completing step from Stage 3); eliminate tanks, artillery, and all planes half way down to prescribed ceiling.

Stage 5.

US Atomic. Reduce atomic stockpile by 50% toward agreed upon ceiling (continuing from Stage 4).

US Conventional. Declare inventory of rockets, guided missiles, B.W.,

and other advanced weapons; supply construction plans and permit complete access to these; eliminate these half way down to prescribed ceiling; eliminate armed forces the rest of way down to the prescribed ceiling.

USSR Atomic. Permit complete access to weapons-producing installations, including plans for weapons; permit complete access to weapons and fissionable materials stockpile. Reduce atomic stockpile by 16% of the way toward agreed upon ceiling.

USSR Conventional. Same as US.

Stage 6.

US Atomic. Reduce atomic stockpile by 75% toward agreed upon ceiling (continuing from Stage 5).

US Conventional. Eliminate submarines, naval surface craft and long range planes rest of way down to prescribed ceiling.

USSR Atomic. Reduce atomic stockpile by 52% toward agreed upon ceiling.

USSR Conventional. Same as US.

Stage 7.

US Atomic. Complete atomic stockpile reduction.

US Conventional. Eliminate tanks, artillery, short-range planes, rockets, guided missiles, B.W., and other advanced weapons rest of way down to prescribed ceiling.

USSR Atomic and Conventional. Same as US.

Reasons for order of steps.

The order of the steps as well as the magnitude of the stages is influenced primarily by the requirement that the plan shall be operable in spite of the present high degree of international distrust. The initial stages will presumably be performed hesitantly by both sides, each watching the other to learn whether it intends to carry out the obligations of the plan. Of the items of cessation of production, disclosure, and disarmament, some are less completely irreversible than others, and those which involve the least irretrievable loss of military advantage seem most appropriate for the early stages. The best example of such a step is cessation of production, for, in case of a later break-down of the plan, production can be revived again with loss only of the material that would have been produced in the meantime. Compared to this, elimination of a large stock-pile down to parity with a lagging competitor has a much greater finality, and is therefore put off until the last few stages. Because the effectiveness of the plan to achieve disarmament is limited by the size of the larger atomic stockpile, cessation of the production adding to this stockpile is halted in the very first stage, with a minimum of concessions of disclosure. Exterior access to declared production facilities is considered sufficient verification at this stage. The access for search of territory which makes it possible to verify that all production facilities have been declared involves much greater permanent loss of information, and is put a little later. Detailed inspection of the facilities makes sense only after this assurance is available that all facilities are known. In the field of production technology it is probable that many of the details of the techniques used are common knowledge to both sides, but it may be that, because of concentration of effort on a few production methods, either side

lacks development of some of the methods known to the other (as if the USSR should have no diffusion plant, for example). Details of these processes are thus understandably cherished by both sides, and their disclosure is postponed beyond access to territory. The disclosure of details of atomic weapon design involves an even more critical irreversible loss of information, and comes later, just before reduction of stockpile, which comes last.

In conventional arms the military dictum that "security of information is a delaying action" emphasizes that the time during which new information retains its secrecy value tends to be shorter in most conventional armaments than in atomic developments. This is true in part because leaks cannot be long prevented after a newly-developed weapon has been issued to the using services, and because methods of production are in most cases obvious after the product is known. There is no such need as in the atomic field to apply sleuthing methods to production plants to ascertain what has been produced, (with the possible exception of the category of advanced weapons) so disclosure and verification are both less sensitive and more straightforward.

The existence of several categories of conventional arms permits progress to actual disarmament more rapidly in one than another, and the order is adjusted to balance the more rigidly determined atomic stages. Because one side has a proponderance in atomic weapons (and incidentally in surface navy) while the other has a preponderance in armed manpower and (presumably) submarines, the latter are scheduled for disclosure and reduction as early as possible to compensate the early atomic concessions. After the first demobilization of troops (C_1), which is an easily reversible process but a confidence-building early step of definite disarmament, comes cessation of advanced-weapon production (A_7) at quite an early stage for

part of the same reason for which the production of atomic materials was halted early. Plane production is discontinued even earlier because of the vital nature and easily-observable production of this weapon. Cessation of production of tanks and naval surface craft is rather late because it is felt that the balance is not so sensitive to present production of these more ponderous weapons (anti-tank weapons being presumably quite effective). The remaining steps follow in a fairly straightforward manner, the last half of the elimination (D) for all categories being kept for the end to balance the elimination of atomic weapons.

The number and duration of the stages.

A fairly large number of stages (7) is employed because the stages are thereby made relatively small and less "credit" need be extended during the process of building up confidence. The US "Arms Count" proposal of April 5, 1952 contained five stages and only covered disclosure and verification, and compared with this seven stages including all that and actual disarmament as well is not a large number. There was talk in the negotiations (and in reference 4) of fewer stages and more sudden disarmament, and this plan could be modified in that direction by combining stages if it is thought that the requisite trust is to be forthcoming.

The time allotted to each stage (which for simplicity of discussion might be the same for each) may not be made extremely short because there is a lot of careful work to be done in each. When one thinks of the details of exploring a country for possible hidden plants, or of detailed study of a pile or diffusion plant, it does not seem practicable to allow less than perhaps six months per stage. Expert opinion would be useful to help determine this. We would prefer to have it go faster if it were judged reasonable (so that the whole plan could be carried out in, say,

two years rather than three and a half or more), but there does not seem to be any really cogent reason against slow progress through the fairly well balanced stages, since the most crucial activities are stopped near the beginning. It is more important to consider early acceptability than rapid progress through the stages, negotiations being potentially so protracted.

SECTION III.—SOME COMMENTS ON THE PROPOSED PLAN.

It is clear that in the foregoing brief outline a substantial number of important problems were not considered. We indicate here a few of the many difficult considerations which remain to be solved before this plan could become working policy.

Because the uncertainty in the verification of past production limits our goal to partial disarmament, the strict control of current production provided by the international-ownership mechanism of the Baruch plan appears disproportionately stringent. The precise degree of control which would be exercised by an international authority over atomic facilities in the possession of the parties to the agreement or over the construction of new facilities remains to be settled.

A related question is whether power piles would or would not be permitted, a question on which the Russians have made their views clear in the past. Obviously no workable agreement would allow for the unlimited construction of power piles, especially in view of the possibilities for breeding. After the completion of the stages in the above plan, further production of fissionable materials might be limited to the small amounts produced in low power research reactors. If power piles are to be permitted by the agreement, their source materials might consist solely of the stockpile remaining legally within the possession of each nation. In effect, this is to say that there can be no substantial development of an atomic power industry. Should unlimited development and construction of power piles be insisted upon, we do not see how the production of fissionable material can be kept small in comparison with the stockpiles allowed.

We have outlined in detail only the step-wise approach to control, without specifying the nature of the control to be maintained during the

long run. If power piles are not allowed by the terms of the agreement, the question arises as to the extent of clandestine production of fissionable material achievable by the use of low-power reactors. We estimate that such production, although not negligible in the absolute sense, can be held to a small fraction of the amounts remaining legally within the possession of the nations, without requiring a degree of control more stringent than seems to be implied by the vague proposals for "continuous inspection" made by the Russians in recent negotiations. The type of inspection specified in a proposal need not be kept in conformity with such almost meaningless implications, however, for it is assumed that if the USSR accepts the proposal as a basis for negotiations, they will then have given tacit consent to a more realistic type of inspection.

With reference to the latter stages of the control plan, we have not defined the meaning of the word "eliminate" with regard to weapons, materials, and production facilities. Among several possible definitions, one of which will have to be chosen for each of these categories, are the following: (1) All crucial material might be destroyed, as for example, by being blown up. (2) The material may all be dumped in a deep part of the ocean. (3) The possibility of elimination by denaturation has been suggested. (It is not at the moment certain whether this can be done for all fissionable materials.) (4) The stockpile of crucial materials may be eliminated by being massively sealed in an appropriate distribution of deep mines or caves under UN guard, for example. With regard to the elimination of production facilities, detailed description of the process of dismantling or destroying the facility will be required.

A very difficult problem will arise if it should turn out that the uncertainty in the establishment of the past production of the United States outweighs the entire production to date of the USSR. In this case, presumably,

the terms of the agreement will either have to allow the USSR to produce until it has caught up with this uncertainty or else the US will have to give to the USSR the difference between the past production of the USSR and the agreed upon ceiling.

It appears to us that the development of the hydrogen bomb, and its implied alteration of the military effectiveness of the fissionable material retained by each nation will warrant a closer consideration of the ceiling values down to which disarmament will proceed. We feel also that particular study must be made of the problem of the control of such advanced weapons as rockets, guided missiles and biological warfare in view of the potential destructiveness of these weapons and of their present rapid rate of development.

Another problem not treated in detail is that of what to do with the fissionable material which is legally retained by the nations; whether to keep it entirely in the form of active weapons or whether a fixed portion should perhaps be held in an immediately inaccessible form, such as in the active body of low power reactors, or perhaps in a denatured form, and to what extent it should be stored under United Nations guard within the boundaries of each possessing nation. Even if an alternative is adopted which makes the material immediately inaccessible for use in a surprise atomic attack, it must be pointed out that the desirable feature of any control plan, namely, adequate warning of a surprise attack, is not achieved to the same degree as in the past, when the uncertainty concerning undeclared stocks could practically be reduced to zero. Since the uncertainty exists, each nation may be considered by the other to retain clandestinely within its possession an amount of fissionable material approximately equal to that which it retains legally, and this secreted material will perforce be available for surprise attack. What can be claimed for a proposal of

this sort is that it will set a maximum on the degree of destruction which can be achieved in any such surprise attack and keep this maximum from growing. If production continues unchecked, the corresponding uncertainty and the destruction achievable in a surprise attack, even under a future control plan, grow proportionately.

Basic to the plan presented above is the assumption that the uncertainty in the establishment of past production can be reduced to such a suitably low value as to make atomic disarmament worth while. It may not be possible to secure agreement to set the ceilings to which stock piles will be reduced at the agreed upon value of the uncertainty; a safety factory of, perhaps, two may be demanded by the USSR in calculating the ceilings. Hence it is imperative that the uncertainty be reduced to the lowest possible figure if a useful amount of disarmament is to be achieved. A considerable number of means for checking upon past production are available and we feel that the opinions of experts in each of these fields must be solicited to assess the value of each means in contributing to an over-all high precision. A partial listing of these techniques follows: (1) personnel records including such items as the whereabouts of prominent scientists, the placement of graduate scientists and engineers, and the number being trained in pertinent fields; (2) the interviewing of personnel including the application of "lie detector" techniques; (3) records of production (The records of production of so complex an undertaking as an atomic production plant are difficult to falsify in a consistent manner. We do not believe, however, that complete reliance can be placed on this means of detection of past production along, as the "Department of Terrestrial Magnetism plan" assumes.) (4) records of mining operations and inspection of mines. (As it is unlikely that shortages in source materials have been the bottleneck in production for either of the nations involved, mining records can at most

set an upper limit to past production and give knowledge of the extent of the stockpile of raw material which may be available for clandestine production under a control plan.) (5) Production records and inspection of the means of production of associated materials such as graphite, heavy water, beryllium or zirconium (same comment as (4)). (6) Electric power allocation records and inspection of power facilities. (Since atomic production installations are large consumers of electric power the diversion of unusual amounts of electric power or the construction of facilities furnishing large amounts of power otherwise unaccounted for may be used as a guide at least to the location of undeclared atomic production installations.) (7) Water consumption. (Exceptionally large amounts of water are required for the cooling of nuclear reactors of high power. Therefore, complete access to all sources of useable water should be required, such as by means of aerial surveys.) (8) Budget surveillance. (Since atomic production facilities are so expensive it may well be that a useful amount of information can be acquired by inspection of financial allotments made by the governments concerned.) (9) Inspection of the production and development of various special delivery devices specifically for atomic weapons. (10) Various physical and chemical means for detecting evidence of past production and for assaying production quantitatively, including such items as: access to the interior of nuclear reactors; isotope separations plants and chemical separations plants, with process, product, by-product, constructional and waste materials made available for chemical and isotopic analysis and physical testing; privilege of detonating selected test atomic bombs for physical measurements and analysis of bomb products and debris.

While it is unlikely that any one of these means (or others) taken individually can be relied upon to guarantee a high degree of precision in the determination of total past production, we believe that taken together a conservative estimate of the determinable uncertainty is in the range of 10-20 per cent of total production, and we consider it entirely possible that a more careful study will permit a substantial reduction of this estimate.

Section IV

Some Fundamental Considerations Underlying The Proposed Armaments Control Plan

The fruitless course of international discussions on the problems of the reduction of armaments and of the international control of atomic energy are too well known to require detailed exposition here. An excellent review of the history of these negotiations is given in the pamphlet of the Society of Friends.(4) What does stand out clearly from a survey of these negotiations is the complete unwillingness of the representatives of the USSR to negotiate, within the meaning of this term as it is understood in "Western" usage and diplomacy, or to compromise or to give ground on even small issues where the advantage to the USSR is not clearly evident to the Praesidium. Thus it appears to us that all hopes for successful dealings with the USSR must rest upon policies which, in recognition of this fact, realistically evaluate the benefit accruing to each party from any proposal and, so far as possible, balance these advantages.

We clearly recognize that the political atmosphere in which the proposed negotiations must be carried out is highly unfavorable to pursuing the "fine art of compromise". The conduct of the recent congress of the Russian Bolshevik party and the content of the speeches therein presented and the recent rejection of the US ambassador are indicative of the present lack of concern about offending the US. We seem at the moment to be viewing the opposite swing of the pendulum, away from the "peace offensive" directed at the US.

Although the lengthy discussions in the United Nations Atomic Energy Control Commission are sufficient example, we learn anew from the course of the negotiations in Korea of the willingness of the Communists to protract

discussion indefinitely as a substitute for negotiation. Hence, we believe that the most careful consideration must be given to the means whereby any proposal is presented to the Russians and to the terms in which it is couched.

We cannot here undertake to analyze in detail various atomic control plans which have been proposed, but we believe that it will be useful to point out a few salient features of each.

The Baruch plan, which is in large measure based on the Acheson-Lilienthal Report, still officially represents US policy. It appears to us to be based on the assumption, nowhere explicitly stated, that only the US would have atomic bombs at the time a control plan would go into effect, and that no large stockpiles of atomic bombs would at that time have been accumulated. From this the conclusion is drawn, and used as a working hypothesis, that it would be possible to determine precisely the extent of past production of fissionable material and therefore that it would be possible to reduce the amount of fissionable material remaining, legally or illegally, within the possession of any nation, to zero, with a high degree of certainty. The Baruch plan requires the establishment of an international atomic control authority, with complete and absolute authority and jurisdiction over all atomic matters. This feature has in the past proved itself unacceptable to the USSR . The Baruch plan also demands the abolition of the veto on the application of sanctions for violations of the terms of the agreement. It has many times been pointed out that in consideration of the type of protection afforded by any atomic control plan, this provision is essentially meaningless. In our opinion, the Baruch plan may be viewed as representing one extreme among possible control plans, namely, a very cautious approach to the control of future atomic production. This attitude about control stems directly from the view that it would be possible to reduce the number of bombs essentially to zero. The very stringency required has made it difficult to "sell" to the USSR (and perhaps

also to the US) because of the excessive interference with the internal affairs of the signatory powers which would be required. Further, it fails to offer what at least the Russians consider to be adequate incentives to their participation, because it fails to take into account the initial disparity in the positions of the two powers. Finally, it must now be regarded as carrying the onus of past failure and, to the view of the USSR, it has the handicap of representing US "domination" of the United Nations Atomic Energy Commission negotiations.

The Russian Atomic Energy Control Proposal. The Russian plan demands a ban on atomic weapons before any adequate means of checking on compliance are effected. It is extremely ill-defined regarding such essential points as the carrying out of inspection, what declared facilities mean, what is control, what is meant by access, how are the problems posed by the existence of atomic power piles to be solved, etc., ad infinitum. It stands at the opposite extreme from the cautious approach adopted in the Baruch plan, so much so that it hardly represents a control plan at all.

The Plan of the Society of Friends. We find ourselves in general agreement with the proposals of this plan, particularly in regard to those points in which reciprocal concessions are required of the parties to the agreement. (See pages 29 - 37 of the pamphlet,[4]) In a sense the plan proposed in this paper represents an elaboration of the Quaker plan. In our opinion the Quaker plan fails to go far enough in providing adequate incentives to the USSR because it does not adequately take into account the actual asymmetry in the relative status of the USSR vs. US at the start of any control plan. It emphasizes speed rather than balance of the disarmament stages. As does the plan we propose, the Quaker plan considers conventional weapons as part of the over-all probelm of disarmament. It definitely proposes the establishment of an international control of atomic facilities but abandons the concept of

international ownership and management of such facilities. It goes beyond our plan in emphasizing specifically the role of the United Nations.

The Plan of the Department of Terrestrial Magnetism. This plan( ) propounds the idea of the relative uselessness (and danger) to the United States of the US stock-pile of atomic bombs, because of the stated higher degree of vulnerability of the US to atomic attack. We do not agree with the extreme fashion in which this point is stated. The plan places a high valuation on putting the USSR in a position in which they must accept what is essentially their own plan or "lose face". While this idea may be a feature of some value in any future plan, to salvage a propaganda victory if all else fails, we do not feel that it should be a major basis for a negotiation. Further, we wish to point out that is the plan were fully formulated it would require for the effective carrying out of its long term aims, similar inspection and control mechanisms as are required in other plans. In the proposal, great stress is laid upon the utility of the records of past production by the respective nations in establishing past production accurately. We do not feel that complete reliance can be placed upon this means of determining past production alone.

The Arms Counts Proposal of the US in the United Nations.[3] There are a variety of views on the problem of the atomic armaments race which reject the possibility of useful gain by present international negotiation on this problem. Among these are:

(1) Maintain peace and security from atomic attack by virtue of the threat of instant destructive retaliation.

(2) Rely on the eventual development of an altered attitude on the part of the Russians as they become familiar with the destructive capacity of atomic weapons and as they become aware of the danger involved in the present unimpeded arms race.

(3) Depend on a policy of watchful waiting, assuming that upon Stalin's death, for example, a significant change of Russian policy will ensue, and

(4) Propose again to the Russians that they accept Marshall Plan aid and participate in the benefits of the Point IV program and thus demonstrate to them the benefits of peaceful coexistence; presumably disarmament will almost automatically follow.

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In our opinion, although these points by themselves or together do not prevent or make unlikely the advent of atomic warfare, the effectiveness as short run policy of the first two items particularly cannot be ignored. The plan herein proposed is explicitly designed to maintain dependency on the threat of retaliation during the stages. Furthermore, nothing we propose herein precludes the United States from carrying on negotiations in all other fields which are now the subject of international disagreement, or from making offers of cooperation such as in the fourth point above.

The positive accomplishments of the negotiations between the Eastern and Western blocks on the atomic control problem are few indeed. While it has appeared at certain stages in the discussions that a degree of unity had been reached on such matters as, for example, the need for inspection, later discussion revealed that no common basis for agreement had been realized, as the word "inspection" was seen not to be similarly understood or defined by the protagonists. It does not even appear that reliance can be placed on future Russian acceptance of points to which they may have seemed to have acceded earlier, as more than once they have reversed themselves.

The approach which we propose is based on the hope that the more extensive contact with andintimate knowledge of atomic weapons that the Russians have obtained through their own work has provided them with a growing incentive to make the concessions necessary for atomic control, and that, while this may not have become apparent in their attitudes because of their lack of imagination or of faith in us, their opinion may be influenced (or the position of a favorably disposed faction within the Praesidium may be influenced) by the existence of an outstandingly realistic offer by the West. Such an offer must take cognizance as well

of their national interest as they see it, as of that of the US. The only plan so far presented for their consideration apparently fails to do this to a sufficient degree and their counterproposal is similarly deficient in accounting for the real interests of the US. The essentially uncompromising atmosphere in which the discussions have been carried out has tended to make the existing proposals become rigid and stereotyped and thus has only served to increase the general level of discord and rancor and to engender further distrust in each other's motives.

Thus, we believe that the possibilities of a peaceful solution to the atomic armaments race have not yet been exhausted, but that the chances for fruitful negotiation and acceptance of new proposals hinge upon the success with which two conditions are met: (1) the national motivations must be analyzed, their status and needs realistically dealt with, and no sacrifices or concessions must be required of one that are not equaled by matching real sacrifices from the other; and (2) a clean break must be made with the conduct of discussions of this problem in the past years, so as to emphasize US sincerity and willingness to negotiate over issues and settle differences by compromise, and to reinstill confidence in the value and power of negotiation, to replace the cynical regard for its function now universally held.

That the continuing armanents race daily increases the likelihood of war and its destructive character is universally agreed, and from the point of view of the US, the attainment of the atomic bomb by the USSR is a calamity. But paradoxically, the continued production of atomic weapons, while it has passed the point at which it might have been possible completely to eliminate them by agreement (because of the impossibility of assaying past production with perfect accuracy), may have increased the chance to attain some degree of disarmament and control by agreement. In consequence of the certainty that nations will not agree to reduce their

stockpiles of atomic weapons to levels below those they must assume would be secreted by other nations (in amount roughly equal to the estimated error in accounting for past production), the problem of devising and securing acceptance of a control scheme which attempts to eliminate all atomic bombs and production of even small amounts of fissionable material no longer exists. This permits the relaxation of many of the features of earlier control schemes without real further loss in security, and thus enables the US to go far in meeting some of the objections raised by the USSR concerning interference with national internal affairs. It needs hardly be stated that, in effectuating any plan which is not merely a paper agreement to eliminate atomic weapons, an unprecedented degree of violation of national sovereignty will still be necessary.

Thus, while the retention or production of even small amounts of fissionable material by individual nations was formerly considered intolerable, it is no longer possible to restrict this amount to less than the order of perhaps 100-200 bombs equivalent (using published estimates as a guide to US production). Enigmatically it is our production which continues to elevate this figure. Thus it is for the best interest of the US to pursue an agreement to stop further production before the irreducible limit of error exceeds reasonable bounds, and at as early a point in the necessarily lengthy time schedule of stages as possible.

In offering the Baruch plan to the UN, the US made a gesture unparallelled in history, proposing to give up a dominant military force when it had sole possession and the prospect that its advantage would not be immediately dissipated. While this kind of opportunity has irrevocably passed, we are still able to give strong evidence of our sincerity and desire for a settlement, by offering to reduce our undoubted advantage in the field of atomic weapons at a greater rate than is required of the USSR, compensated by a corresponding greater rate of disarmament in conventional weapons

in which, at least in regard to manpower, the Russians have superiority. Further, the fact that Russia has the atomic bomb, and almost certainly a more detailed knowledge of our facilities, past production and present production rate than we have of theirs, enables the US to offer verification of this information at an early stage without substantial loss in military security. Thus, we may "dramatize" our sincerity with concrete action, secure a worthwhile concession from the Russians on conventional arms, and still at each stage have a test (in terms of Russian compliance with the terms of the agreement) of USSR willingness to continue the stages of disarmament, without a disproportionate loss in relative military potential.

A prime consideration in our deliberations in related to our concern that an agreement must be acceptable to the Congress before being put into effect. With this in mind we have balanced the concessions each nation grants in performing each stage so that, as far as possible, the relative military security of the US would not be diminsihed. Although it is outside the province of this report to deal with the political methods of negotiation or presentation of a plan, we believe that a significant gain would be realized if some assurance of the support of Congress for the general principles and spirit of the plan could be obtained prior to its presentation to the USSR. With such backing our representatives in the discussions would have clearly before them the limits within which settlements of differences could be compromised, and would not be operating in a vacuum, uncertain as to US acceptance of the agreement. The difficulty here arises that Congress does not keep secrets so the negotiation almost inevitably becomes prematurely confused with the "propaganda war". Congressional concern about the magnitude of the atomic concessions offered in this plan by the US may be tempered by the arguments that most of the information--granting steps are, in large part, already in fact in the hands

of the USSR, and that, as we have a stockpile which is approaching saturation, the loss in current production occassioned by cessation of production represents a marginal gain in U.S military potential, while the corresponding concessions by the Russians substantially reduce their atomic striking power.

The proposal must be carefully designed to avoid presenting damaging propaganda setups to the Russians. It is probably not possible completely to eliminate this factor, considering the adeptness of the Russians in distorting the meaning and intention of any opponent; negotiations carried out in private minimize the opportunities for propagandizing and thus may be recommended. On the other hand should negotiations fail due to the intransigeance of the Russians, the proposal may be publicised and serve as progoganda against the Russians. A plan which offers both the main feature of the Russian proposal--immediate cessation of production--and the asymmetric approach to equality in which our steps toward atomic disarmament are larger than theirs, furnishes a more reliable and obvious test of ultimate Russian intentions by putting on them the onus of rejection.

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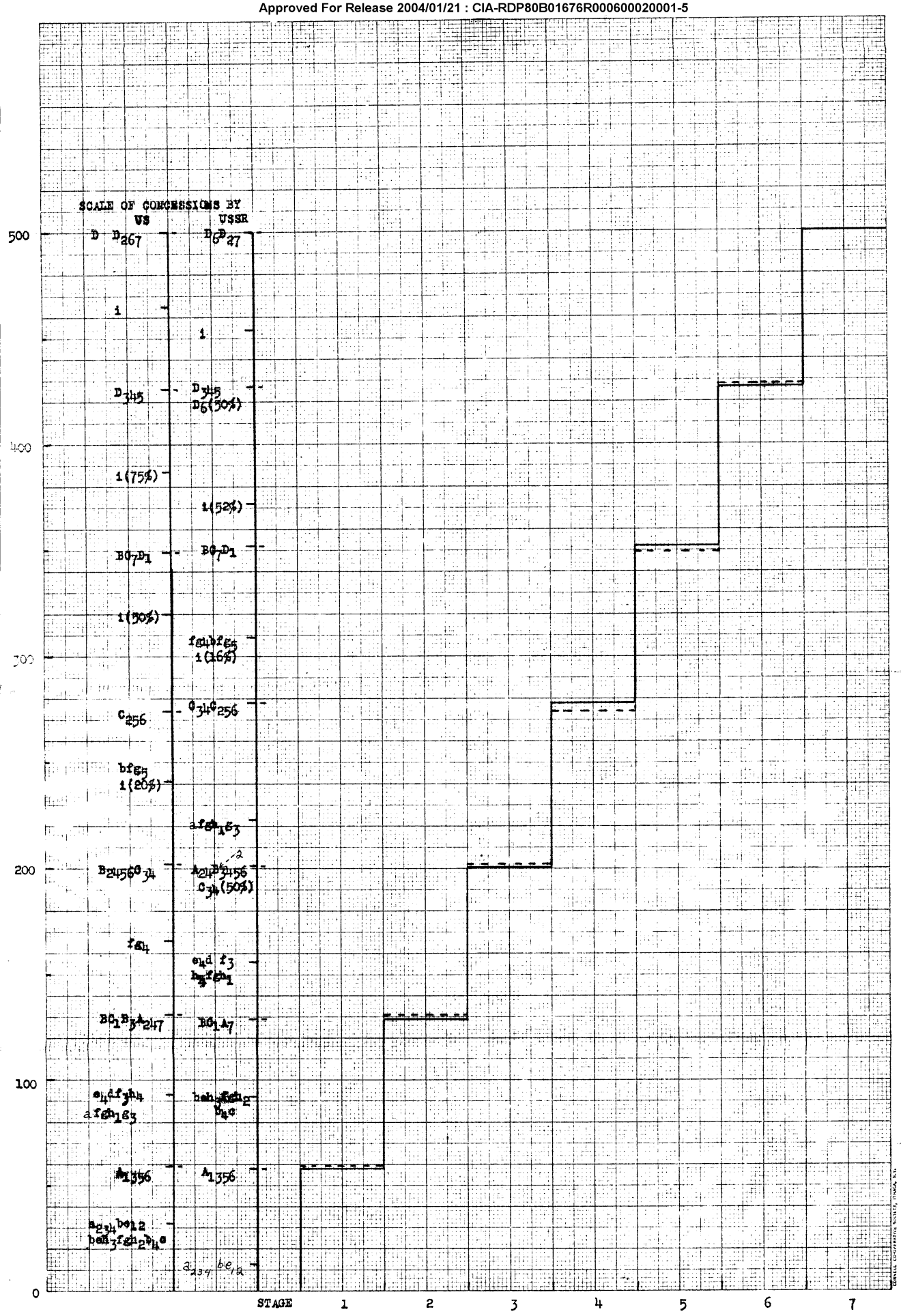

FIG. 2. ASYMMETRIC PLAN - COMBINED SCHEDULE OF CONCESSIONS.

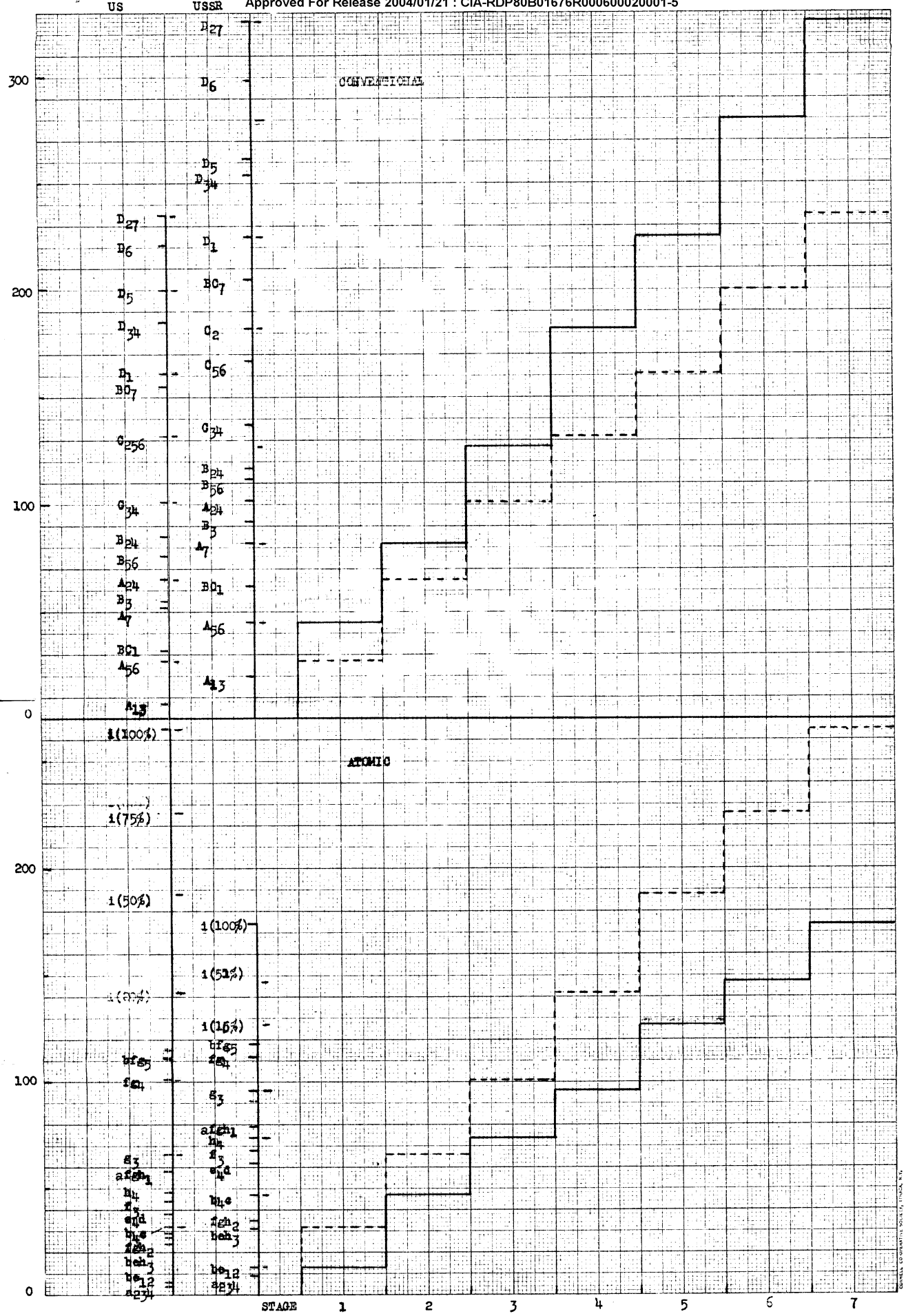

FIG. 1. ASYMMETRIC PLAN - SCHEDULE OF CONCESSIONS.